

3.20 VISUAL QUALITY

3.20.1 Studies and Coordination

The visual quality analysis evaluated the potential change in visual quality for each major transportation element of the proposed alternatives. To accomplish this, the analysis selected key viewpoints within the affected area and then identified typical visual impacts in the context of these key viewpoints. This section describes those impacts, the landscape character, and the viewer groups within the study area, including their sensitivity and location. Potential mitigation measures are described, including ways to avoid or minimize visual quality impacts as well as ways to restore and enhance visual quality.

Methodology and criteria were jointly determined and agreed upon by the Washington Department of Transportation and David Evans and Associates, Inc. (DEA). The methodology follows the Federal Highway Administration's *Visual Impact Assessment for Highway Projects* (FHWA-HI-88-054) manual. In addition, the comprehensive plans were examined for each of the municipalities along I-405 to gain an understanding of their urban design goals.

3.20.2 Methodology

Aesthetics is concerned with both the character of visual experience and its quality. Visual quality has both viewer and visual resource components, and its interpretation can be subjective. Nonetheless, there is clear public agreement that the visual resources of certain landscapes have inherently high visual quality. One set of proven evaluative measures to assess visual quality includes three components: vividness, intactness, and unity.

For the I-405 Corridor Program, these three measures were evaluated through quantitative and qualitative analysis as described below:

- *Vividness* measures the memorability of landscape components as they combine in striking and distinctive visual patterns. There are four elements of vividness (Land form – VL; Water form – VW; Vegetative form – VV; and Man-made form – VM) that may be present or affect the landscape. The distinctiveness or quality of a specific element within a landscape scene defines this element. The ratings range from 1 to 7, with a rating of 7 being a high degree of vividness.
- *Intactness* measures the integrity of visual patterns and the extent to which the landscape is free from visually encroaching elements. This factor can be present in well-kept urban and rural landscapes, as well as natural settings. In a predominantly natural environment, manmade development can be an additive element that does not necessarily encroach on its visual setting. Predominantly man-made landscapes may also have strong visual character. The absence of encroaching features, or eyesores, contributes to high visual intactness in either setting. A rating of 7 indicates a landscape that is highly intact and contains no subtractive disruptions.
- *Unity* measures the visual coherence and compositional harmony of the landscape considered as a whole. One aspect of this criterion is the unity between manmade and natural pattern elements, and usually attests to the careful design of individual components in the landscape. A rating of 7 represents a landscape with a coherent, harmonious visual pattern.

The analyses in this section are based on the *I-405 Corridor Program Draft Visual Resources Expertise Report* (DEA, 2001), herein incorporated by reference.

3.20.3 Affected Environment

3.20.3.1 Existing Visual Environment

The I-405 corridor begins in the south at the I-5 intersection in Tukwila, crosses over the industrial valley through Renton, and is carved into the west-facing banks of Lake Washington from Renton through downtown Bellevue and into east Kirkland. North of Kirkland, the highway traverses several hills and then crosses valleys where commercial and urban development has concentrated, until intersecting with I-5 again near Lynnwood. The general character of the views changes from highly man-made in the south end of the corridor, to mostly vegetated in the north section. The most urban views are through Bellevue. The project area has views of important regional landforms in all directions, including Lake Washington, the Cascade Mountains, Mount Rainier, the Olympic Mountains, and the Seattle and Bellevue skylines. The I-405 corridor viewshed is described in more detail in the *I-405 Corridor Program Draft Visual Resources Expertise Report* (DEA, 2001).

According to the *Roadside Classification Plan* (WSDOT, 1996) for I-405, the section from milepost 0.00 to 5.80 is classified *semiurban* as it passes through Tukwila and Renton. Milepost 5.80 to 10.50 is classified *rural*, between Renton and Coal Creek Parkway. The highway is *semiurban* again through the Factoria area and I-90 interchange from milepost 10.50 to 12.98. The classification changes to *urban* through Bellevue from milepost 12.98 to 14.48, changing back to *semiurban* just before the interchange with SR 520, from milepost 14.48 to 21.38 through Kirkland. The remainder of I-405 from milepost 21.38 to its intersection with I-5 at milepost 30.29 is classified *rural*. The *Roadside Classification Plan* was used as the basis for recommended mitigation components.

3.20.3.2 Viewer Characteristics

Visual experience is a combination of visual resources and viewer response. Visual perception is the basic act of seeing or recognizing an object, but physical conditions can affect perception. As observer distance increases, the ability to see the details of an object decreases. As observer speed increases, the breadth of lateral vision decreases and the observer tends to focus more along the line of travel.

Viewer groups may be differentiated by physical factors that modify perception. A basic distinction can be made between views *from* the road (highway users) and views *to* the road (highway neighbors). Viewshed mapping can further categorize these viewer groups by viewer exposure: the physical location of each viewer group, the number of people in each group, and the duration of their view.

The receptivity of different viewer groups to the visual environment and its elements is not equal. This variable receptivity is viewer sensitivity, and is strongly influenced by visual preference. Viewer sensitivity modifies visual experience directly by viewer activity and awareness, and indirectly by values, opinions, and preconceptions.

Viewer activities such as driving in heavy commuter traffic or through a construction zone can distract an observer from much of the visual environment, whereas driving for pleasure can encourage one to look at the view more closely and in greater detail. Viewer awareness is

heightened by visual change such as entering a city, cresting a hill, or the sudden appearance of water or a mountain. Measures that modify viewer exposure, such as selective clearing or screening, may also be employed to deliberately modify viewer awareness.

Local values and goals indirectly modify viewer experience by shading view expectations and aspirations. Viewers may be particularly sensitive to the visual resources of a particular landscape because of its cultural significance or other unique feature, such as the timber railroad trestle in the Wilburton area of Bellevue.

3.20.3.3 Views From the Facility

Highway users generally have reduced visual acuity and a narrowed cone of vision as they concentrate on driving tasks. The I-405 corridor intersects with I-5 twice and crosses over I-90. Most travelers entering the Seattle metropolitan area from the east, north, or south must pass through these interchanges. The variety of visual experiences of the I-405 traveler includes forested areas that open into panoramic views of valleys and urban landscapes. Periodic views of Mt. Rainier, the Cascade range, Lake Washington, and the Seattle and Bellevue skylines occur as the motorist journeys through the corridor.

Principal groups that have views from the facility are local, commuter, and tourist traffic. Tourists and vehicle passengers (non-drivers) have the highest viewer sensitivity but low view frequency. Local traffic is considered moderately sensitive because of higher view frequency, which makes the viewers sensitive to any changes to their usual view. Commuters, somewhat inured and perhaps indifferent to the view by repetition, have lower viewer sensitivity. All individual views from the roadway are of relatively short duration due to the movement of the viewer; however view duration is variable with the season and climatic conditions.

3.20.3.4 Views Toward the Facility

Groups that have views toward the facility generally take in a wider vista, with the highway a component of the larger landscape. Views toward the roadway are from adjacent residential and commercial areas, and from travelers on I-5, I-90, and ten state arterial highways.

Within the project study area, the principal groups likely to view the projects and exhibit *high* viewer sensitivity include:

- Persons engaged in recreation at existing park and trail sites.
- Residents of predominantly single-family areas.
- Residents of predominantly multi-family areas (with correspondingly taller structures).
- Teachers, children, and parents at existing schools and associated playfields (generally located in residential areas).

These viewers are more sensitive to changes in their view because they are exposed to the view more frequently and for relatively longer periods. The opening or restricting of existing views due to new construction may also positively or negatively affect property values. In areas where the road is cut into the slope, views would be affected more by adding aerial structure than by widening the existing roadway.

Viewer groups likely to exhibit moderate or low viewer sensitivity include the following, listed in order of decreasing sensitivity:

- Travelers along existing arterial streets, highways, and freeways that traverse the study area.
- Employees and visitors in existing office and hotel centers in the urban cores of each city.
- Employees and visitors in existing commercial, distribution, transportation, and industrial businesses.

These groups are concentrated primarily in the city centers. Views from a superior viewing position (above the roadway elevation) typically would be affected less by adding aerial structures than by widening the existing roadway due to the perspective of the viewer.

3.20.3.5 Key Views

Key views were selected to represent the range of views within the I-405 corridor. The view selection process included field reconnaissance of the corridor under several climatic conditions, and review of the plans and policies of the cities of Tukwila, Renton, Newcastle, Bellevue, Kirkland, and Bothell. The potential impacts to visual resources were identified for the 21 major transportation elements and are discussed below in the Impacts section.

The key view locations from the roadway are mapped in Figure 3.20-1. Key view locations toward the roadway are mapped in Figure 3.20-2. Key view photographs are provided in Appendix D, and roadway sections are provided in Appendix E. Photographs in Appendix D were taken using a variety of shutter speeds, lenses, and lens focal lengths to better illustrate the described view.

3.20.4 Impacts

Of the more than 20 major transportation elements that comprise the action alternatives, ten were found to have notable impacts on visual resources in the I-405 corridor. (Refer to Appendix A [I-405 Corridor Program - Major Elements of Alternatives] for a more detailed description of these major transportation elements.) Table 3.20-1 summarizes the potential impacts associated with these ten elements. The alternatives producing the noted impacts are listed in the second column.

3.20.4.1 No Action Alternative

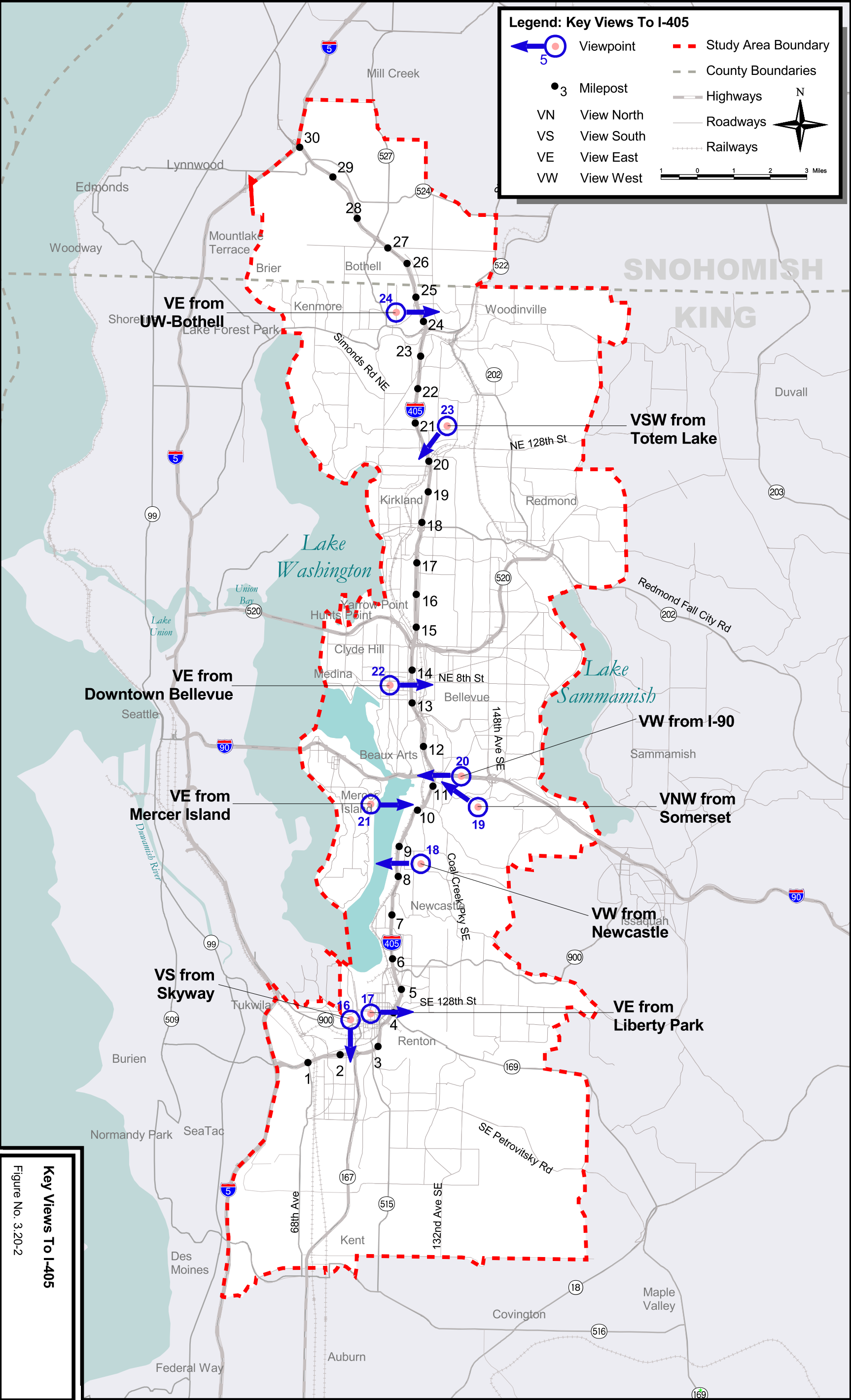
Construction Impacts

Most construction impacts to visual resources are considered to be temporary and relatively short-lived. Temporary visual impacts include the presence of construction equipment and workers, materials, debris, signage, and staging areas that would reduce the visual quality in the construction zone. Temporary lighting may be employed for nighttime construction of some project elements. Detours or lane shifts demand greater driver attention and distract the highway user from views outside the construction activity.

Operational Impacts

The baseline projects contained in the No Action Alternative would result in long-term visual impacts independent of the I-405 Corridor Program, and the effects of those projects are, or will be, addressed through the environmental analysis, documentation, and review completed for the individual projects.

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Table 3.20-1: Potential Visual Impacts and Mitigation Measures

Element	Alternatives	Potential Impacts	Mitigation ^a
4. Physically Separated, Fixed-Guideway High-Capacity Transit (HCT)	1, 2	<ul style="list-style-type: none"> Overhead structure for aerial alignment. Catenary poles and overhead wires. Station shelter architecture and lighting. Barrier, retaining, or acoustical walls. Additional pavement. Headlight glare. 	<ul style="list-style-type: none"> Use at-grade or underground alignment at high quality viewpoints. Use vegetative screening. Use consistent and interesting architectural style. Provide landscaped median between road and HCT alignments. Screen nighttime glare sources.
7. HOV Express Lanes with Direct Access Ramps	No Action, 1, 2, 3, 4, <u>Preferred Alternative</u>	<ul style="list-style-type: none"> Additional pavement. Overpasses or underpasses. Barrier or retaining walls. Additional ramp structures. 	<ul style="list-style-type: none"> Avoid overpasses that may block views at key viewpoints. Use architectural treatments on concrete surfaces of walls and structures. Reduce mass of ramp structures.
8. Additional Park-and-Ride Capacity	No Action, 1, 2, 3, 4, <u>Preferred Alternative</u>	<ul style="list-style-type: none"> Additional pavement. Glare from light fixtures. More parked cars. Removal of existing vegetation. Multi-level parking structure. 	<ul style="list-style-type: none"> Use screening perimeter landscaping. Screen nighttime glare sources. Provide interior landscaping, especially tree canopy cover. Use consistent and interesting architectural character. Provide pedestrian plazas at transit stops. Provide pavement changes, textures, or scoring for interest.
9. Additional Transit Center Capacity	No Action, 1, 2, 3, 4, <u>Preferred Alternative</u>	<ul style="list-style-type: none"> Additional pavement. Glare from light fixtures. More parked cars. Removal of existing vegetation. Multi-level parking structure. New retail/residential mixed-use buildings. 	<ul style="list-style-type: none"> Use screening perimeter landscaping Provide interior landscaping, especially tree canopy cover. Use consistent and interesting architectural character. Provide pedestrian plazas at transit stops. Provide pavement changes, textures, or scoring for interest. Screen nighttime glare sources Encourage shared parking for mixed-use projects.
10. One General Purpose Lane Each Direction	2, 4	<ul style="list-style-type: none"> Additional pavement. Additional ramp structures. Additional headlight glare. Removal of existing vegetation. Elevated structure for viaduct. Barrier or retaining walls. Cut/fill slopes. 	<ul style="list-style-type: none"> Revegetate in accordance with existing vegetation and the <i>Roadside Classification Plan</i>. Screen nighttime glare sources. Enhance desirable views by selective removal of vegetation where applicable. Grade slopes to blend with the natural topography. Reduce mass of ramp structures. Reduce height and scale of walls where practical.

Element	Alternatives	Potential Impacts	Mitigation ^a
11. Two General Purpose Lanes Each Direction	3, <u>Preferred Alternative</u>	<ul style="list-style-type: none"> • Additional pavement. • Additional headlight glare. • Removal of existing vegetation. • Elevated structure for viaduct. • Barrier or retaining walls. • Cut/fill slopes. 	<ul style="list-style-type: none"> • Revegetate in accordance with existing vegetation and the <i>Roadside Classification Plan</i>. • Screen nighttime glare sources. • Enhance desirable views by selective removal of vegetation where applicable. • Grade slopes to blend with the natural topography. • Reduce mass of ramp structures. • Reduce height and scale of walls where practical.
12. Collector-Distributor Lanes on I-405	2, 3, 4, <u>Preferred Alternative</u>	<ul style="list-style-type: none"> • Additional pavement. • Additional headlight glare. • Removal of existing vegetation. • Elevated structure for viaduct • Barrier or retaining walls. • Cut/fill slopes. 	<ul style="list-style-type: none"> • Revegetate in accordance with existing vegetation and the <i>Roadside Classification Plan</i>. • Enhance desirable views by selective removal of vegetation where applicable. • Grade slopes to blend with the natural topography. • Reduce height and scale of walls where practical.
13. Two Express Lanes Each Direction	4	<ul style="list-style-type: none"> • Additional pavement. • Additional headlight glare. • Removal of existing vegetation. • Elevated structure for viaduct • Barrier or retaining walls. • Cut/fill slopes. 	<ul style="list-style-type: none"> • Revegetate in accordance with existing vegetation and the <i>Roadside Classification Plan</i>. • Enhance desirable views by selective removal of vegetation where applicable. • Grade slopes to blend with the natural topography. • Reduce height and scale of walls where practical.
16. Improve Connecting Freeway Capacity to I-405.	2, 3, 4, <u>Preferred Alternative</u>	<ul style="list-style-type: none"> • Additional pavement. • Additional headlight glare. • Removal of existing vegetation. • Additional ramps. • Additional barrier or retaining walls. • Cut/fill slopes. 	<ul style="list-style-type: none"> • Revegetate in accordance with existing vegetation and the <i>Roadside Classification Plan</i>. • Enhance desirable views by selective removal of vegetation where applicable. • Grade slopes to blend with the natural topography. • Reduce height and scale of walls where practical.
21. Corridor Pedestrian and Bicycle Improvements.	1, 2, 3, 4, <u>Preferred Alternative</u>	<ul style="list-style-type: none"> • Wider overpasses. • Pedestrian bridges. 	<ul style="list-style-type: none"> • Revegetate in accordance with existing vegetation and the <i>Roadside Classification Plan</i>. • Enhance desirable views by selective removal of vegetation where applicable. • Grade slopes to blend with the natural topography. • Reduce height and scale of walls where practical.

^a For additional mitigation measures see Section 3.20.5.

Under the No Action Alternative, nine projects would affect visual resources and views to or from I-405. No expansion of I-405 is included in this alternative, although a new ramp and arterial widening would have some impact to views. This alternative also includes park-and-ride

capacity expansions and additional transit center capacity. These projects include additional paving, ramps, structures, walls, or barriers. They may also include removal of existing vegetation, and additional headlight glare from vehicles using additional lanes and ramps.

3.20.4.2 *Alternative 1: HCT/TDM Emphasis*

Construction Impacts

Construction impacts for Alternative 1 would be similar to those described for the No Action Alternative.

Operational Impacts

Alternative 1 includes five major elements that may affect visual resources: physically separated, fixed-guideway high-capacity transit, HOV express with direct-access ramps, park-and-ride capacity expansions, transit center capacity improvements, and pedestrian and bicycle improvements. Table 3.20-1 summarizes the potential impacts associated with each of these major elements. These improvements include additional paving, ramps, structures, walls, or barriers. They may also include removal of existing vegetation, and additional headlight glare from trains or buses using a dedicated right-of-way. Transit alignments below grade would have less visual impact than aerial or at-grade portions of the route.

3.20.4.3 *Alternative 2: Mixed Mode with HCT/Transit Emphasis*

Construction Impacts

Construction impacts for Alternative 2 would be similar to those described for the No Action Alternative.

Operational Impacts

Alternative 2 includes eight major elements that may affect visual resources: physically separated, fixed-guideway high-capacity transit, HOV express with direct-access ramps, park-and-ride capacity expansions, transit center capacity improvements, one general purpose lane in each direction on I-405, I-405 collector-distributor lanes, capacity improvements on freeways connecting to I-405, and pedestrian and bicycle improvements. Table 3.20-1 summarizes the potential impacts associated with each of these major elements. These improvements include additional paving, ramps, structures, walls, or barriers. They may also include removal of existing vegetation, and additional headlight glare from additional traffic.

3.20.4.4 *Alternative 3: Mixed Mode Emphasis*

Construction Impacts

Construction impacts for Alternative 3 would be similar to those described for the No Action Alternative.

Operational Impacts

Alternative 3 includes seven elements that may affect visual resources: HOV express lanes with HOV direct-access ramps, park-and-ride capacity expansions, transit center capacity improvements, two general purpose lanes in each direction on I-405, I-405 collector-distributor lanes, capacity improvements on freeways connecting to I-405, and pedestrian and bicycle

improvements. Table 3.20-1 summarizes the potential impacts associated with each of these major elements. These improvements include additional paving, ramps, structures, walls, or barriers. They may also include removal of existing vegetation, and additional headlight glare from additional traffic.

3.20.4.5 *Alternative 4: General Capacity Emphasis*

Construction Impacts

Construction impacts for Alternative 4 would be similar to those described for the No Action Alternative.

Operational Impacts

Alternative 4 includes eight elements that may affect visual resources: HOV express lanes with direct-access ramps, park-and-ride capacity expansions, transit center capacity improvements, one general purpose lane in each direction on I-405, I-405 collector-distributor lanes, two express lanes in each direction in the I-405 corridor, capacity improvements on freeways connecting to I-405, and pedestrian and bicycle improvements. Table 3.20-1 summarizes the potential impacts associated with each of these major elements. These improvements include additional paving, ramps, structures, walls, or barriers. They may also include removal of existing vegetation, and additional headlight glare from additional traffic.

3.20.4.6 *Preferred Alternative*

Construction Impacts

Construction impacts for the Preferred Alternative would be similar to those described for the No Action Alternative.

Operational Impacts

Operational impacts for the Preferred Alternative would be similar to those described for Alternative 3.

3.20.5 Mitigation Measures

Where appropriate and practicable, mitigation measures such as the following will be employed to partially or fully mitigate the adverse visual impacts of the major transportation elements of the alternatives:

- Realigning or modifying routes to avoid or reduce impacts on scenic visual resources and/or sensitive viewing groups.
- Minimizing clearing for construction, preserving existing stands of mature trees.
- Planting appropriate vegetation within the project right-of-way to preserve and restore the rural, semiurban, or urban character of existing views where appropriate according to the *Roadside Classification Plan* (WSDOT, 1996).
- Screening views of the roadway, elevated structures, retaining walls, noise walls, and other project features from areas with high viewer sensitivity.

- Grading slopes to blend with the natural topography by softening slope transitions, substituting earth berms for noise walls where practical, and limiting cut and fill slopes to 3:1 horizontal to vertical for optimal revegetation survival.
- Employing wide-span bridge crossings of local streets, trails, streams, and wetlands to minimize view obstruction and shading.
- Enhancing the architectural design of project features such as retaining walls and noise walls, including stepping and battering walls to reduce apparent height, using a consistent design vocabulary throughout the corridor, using lighter weight materials for spans to produce reduced structural silhouettes, applying texture to the concrete surfaces to reduce apparent scale, and applying concrete sealants for uniform color and to limit graffiti damage.
- Shielding roadway light fixtures to minimize glare and ambient light spillover into adjacent residential areas.
- Replacing street trees to provide screening for high quality visual resources and high viewer sensitivity.
- Acquiring sufficient right-of-way, where feasible and reasonable, for planting at the base of retaining walls, on the highway side of noise walls, and at other locations that adjoin areas of high viewer sensitivity.
- Designing gateway markers at the visual entrances to each city along the corridor appropriate to community urban design goals, in concurrence with local jurisdictions.
- Use of low ground covers and deciduous trees with high canopies at parking lots to balance visibility, security, and buffering.
- Providing perimeter fencing and landscape buffering around parking and transit center lots.
- Darkening concrete surfaces to aid in reducing reflective sunlight glare.
- Planting medians (where they exist) and the perimeters of parking lots to reduce headlight glare onto oncoming traffic or adjacent properties.

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